

Ch. 2.3

Theorem 2.3.1

If $a \propto b$, $b \propto c$, $a \propto c$

∴ $a = k_1 b$, $b = k_2 c$, where k_1 & k_2 are nonzero constants.

Then,

$$a = k_1 k_2 c \quad (1)$$

where $k_1 k_2$ is a nonzero constant so $a \propto c$ by definition

Ch. 2.5

Theorem 2.5.1

Suppose H is a set of geometrically similar objects. Let S denote the surface area of an object and l denote a characteristic dimension. Then,

$$S \propto l^2 \quad (1)$$

and the constant of proportionality is the same for every object in H .

Theorem 2.5.2

Suppose H is a set of geometrically similar objects. Let V denote the volume of an object and l denote a characteristic dimension. Then

$$V \propto l^3 \quad (2)$$

and the constant of proportionality is the same for every object in H .